

USE OF NIGHT VIDEO TO QUANTIFY ADULT LAMPREY PASSAGE AT BONNEVILLE AND THE DALLES DAMS, 2007 AND PRELIMINARY 2008 RESULTS

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ABSTRACT

In order to estimate total daily passage of Pacific lamprey (*Lampetra tridentata*) in the lower Columbia River, we used video cameras to record the nighttime (2100-0500 h) movements of lamprey at the count windows of Bonneville and The Dalles Dams. Lamprey movements were recorded from mid-May through early September 2007 during approximately 100 nights (8 h per night) at all count windows. The equipment at the Bonneville Dam Washington shore window experienced a high outage rate (54 nights). Lamprey movements were also recorded in 2008 from the end of May until the end of September at Bonneville and The Dalles dams (~132 nights).

Lamprey numbers have been declining in recent years; the lamprey day count in 2007 at Bonneville Dam was a third of the seven year average (2006-2006) and half of the seven year average at The Dalles Dam. We estimated lamprey escapement at the two dams by summing the day count, the night video count, and the LPS (Lamprey Passage Structure –Bonneville Dam) count. The nighttime net lamprey count (unadjusted for outages) at the Bradford Island fish ladder was 18,352, the day count was 8,430, and the LPS count was 6,817 for a total escapement estimate of 33,599. The Washington Shore fish ladder nighttime video count estimate was -439 (based on the available 56% of data), the day count was 9,931, and the LPS count was 2,013 for a total escapement of 11,505. A net nighttime count of 4,145 lampreys (North=3,137; East =1,010) was estimated for the study period at The Dalles Dam. The day count total at The Dalles Dam was 5,791 (North=3,246; East=2,545) for a total escapement estimate of 9,938.

Nighttime video lamprey behavior indicated upstream lamprey passage events at night accounted for 68% of the total passage events at Bradford Island, 50% at Washington Shore at Bonneville Dam, and 85% at the North ladder and 71% at the East ladder at The Dalles Dam. The proportion of lamprey passage events at night varied by hour with lower percentages of passage in the early evening (2100-2200 h) and in the early morning (0400-0500 h).

Several technical improvements were made for collection of the 2008 video. Of the 2008 nighttime video that has been reviewed, the trends between day and night and among ladders are similar to those found in 2007. Future analyses will determine the accuracy of the day counts as an index of total passage and estimated total escapement based on day, night and LPS counts.